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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/599,339

09/26/2006

Do Gyun Kim

2017-119

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05/27/2008

IPLA P.A.

3580 WILSHIRE BLVD.

17TH FLOOR

LOS ANGELES, CA 90010

EXAMINER

TISCHLER, FRANCES

ART UNIT

PAPER NUMBER

4171

MAIL DATE

DELIVERY MODE

05/27/2008

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.



<b>Office Action Summary</b>	<b>Application No.</b> 10/599,339	<b>Applicant(s)</b> KIM ET AL.	
	<b>Examiner</b> Frances Tischler	<b>Art Unit</b> 4171	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 26 September 2006.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-26 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-26 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>9/26/06</u> .   | 6) <input type="checkbox"/> Other: _____                          |



## DETAILED ACTION

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1 – 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Matsumura (US 5,446,109) in view of Kim, Do-Gyun (WO 03/051956, using the English language equivalent: US 7,166,690) or the converse.

Applicant claims a recycling method of a mixed waste of polyester and polyamide comprising depolymerizing the mixed waste of polyester and polyamine, polycondensing the depolymerized product with a polyhydric alcohol to obtain a polyester-amide block polymer having an acid value of 1 to 150 mgKOH/g and recovering the polyester-amide block polymer in a solid state or solution state where the acid value is greater than 20 mgKOH/g, or recovering the polyester-amide block polymer in a solid state where the acid value is less than 20 mgKOH/g. Alternatively, treating the mixed waste of polyester and polyamide with a polyhydric alcohol to obtain a polyester-amide depolymerization product; reacting it with a polybasic acid and



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polycondensing the product with the polyhydric alcohol to obtain the block polymer then reacting it with a basic compound to form the salt thereof to form a water-soluble polyester solution. Alternatively, reacting the mixed waste with a polyhydric alcohol to depolymerize the waste, stabilizing the resulting product with a solid resin to obtain a stabilized depolymerized product, polycondensing it with a polybasic acid, MNSSIP or a mixture of both, adding a polyhydric alcohol to obtain the block polymer and recovering the block polymer in the form of an aqueous solution dissolved in water, or in the form of an organic solution where the polymer is dissolved in a hydrophilic organic solvent, or in solid form.

Matsumura discloses (column 2, lines 23 – 51, examples 8, 10, 11, 12, 13, and claims 1, 7, 8) a method of forming a polyamide/polyester block copolymer where a polyamide and a polyester or epsilon-caprolactone are reacted in the presence of an aromatic monohydroxy compound. The reactants are heated and depolymerized and then polycondensed to form a polyester/polyamide block polymer. Matsumura teaches the use of a monohydroxy compound but fails to teach the use of a polyhydric alcohol. Matsumara also fails to teach the use of dissolving agents and acids for second depolymerization.

Kim discloses (abstract, figures 1 – 3, specification, claims) a method of recycling waste polyester resins by depolymerizing the polyester, then polycondensing it with a polyhydric alcohol and recovering it in solid or liquid form. Kim's disclosure of the claims is almost identical in every respect to applicant's claims but fails to teach the inclusion of a polyamide with the polyester, disclosing only the use of polyesters. For comparison,



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applicant's claims and Kim's claims are shown below (Kim's disclosure is framed, applicant's is not):

Claim 1. (original) A recycling method of a mixed waste of polyester and polyamide, comprising:

- (a) depolymerizing the mixed waste of polyester and polyamide;
- (b) polycondensing the depolymerized product with a polyhydric alcohol to obtain a polyester-amide block polymer having an acid value of 1 to 150 mgKOH/g; and
- (c) recovering the polyester-amide block polymer in a solid or solution state where the acid value is greater than 20 mgKOH/g, or recovering the polyester-amide block polymer in a solid state where the acid value is less than 20 mgKOH/g.

1. A method for recycling waste polyester resin, the method comprising:

- (b) depolymerizing waste polyester resin;
- (b) polycondensing the depolymerized product from step (a) with a polyhydric alcohol to provide a polyester polymer having an acid value of 10-150 mgKOH/g; and
- (c) recovering the polyester polymer in solid or liquid form if the polyester polymer from step (b) has an acid value of more than 20 mgKOH/g or recovering the polyester polymer in solid form if the polyester polymer from step (b) has an acid value of less than 20 mgKOH/g.

Claim 2. (original) The method according to claim 1, wherein step (a) includes

- (a-1) reacting the mixed waste of polyester and polyamide with a solid resin dissolving agent to carry out first depolymerization; and
- (a-2) reacting the depolymerized product with a polybasic acid to carry out a second depolymerization and addition reaction (Diels-Alder Reaction).



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2. The method of claim 1, wherein step (a) comprises:  
(a1) reacting the waste polyester resin with a solid resin  
dissolvent for primary depolymerization; and  
(a2) reacting the depolymerized product from step (a1)  
with a polybasic acid for secondary depolymerization  
and an addition reaction.

Claim 3. (original) The method according claim 2, wherein the solid resin  
dissolving agent is at least one selected from the group consisting of gum rosin, wood  
rosin, tall rosin, hy- drogenated rosin, maleated rosin, rosin ester, pinene resin, dipentene  
resin, C5 petroleum resin, C9 petroleum resin, dammar resin, copal resin, DCPD resin,  
hy- drogenated DCPD resin and maleated styrene resin.

3. The method of claim 2, wherein the solid resin dissol-  
vent is at least one selected from the group consisting of gum  
rosin, wood rosin, dehydrogenated rosin, hydrogenated  
rosin, maleic rosin, rosin ester, pinene resin, dipentene resin,  
C5 petroleum resins, C9 petroleum resins, dammar resin,  
copal resin, dicyclopentadiene resin, hydrogenated dicy-  
clopentadiene resin, and styrene maleic resin.

Claim 4. (original) The method according claim 2, wherein the mixing ratio of  
the solid resin dissolving agent : mixed waste is in the range of 1:10 to 10:1, on the basis  
of weight ratio.

4. The method of claim 2, wherein the weight ratio of the  
waste polyester resin to the solid resin dissolvent is in the  
range of 1:9-9:1.



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Claim 5. (original) The method according claim 2, wherein the polybasic acid is at least one selected from the group consisting of anhydrous phthalic acid, isophthalic acid, terephthalic acid, adipic acid, azelaic acid, sebacic acid, anhydrous tetrahydrophthalic acid, anhydrous maleic acid, fumaric acid, itaconic acid, trimellitic acid, anhydrous trimellitic acid, anhydrous pyromellitic acid, succinic acid, cyclohexane dicarboxylic acid, naphthalene dicarboxylic acid, dimeric acid and C6 - C25 fatty acid.

5. The method of claim 2, wherein the polybasic acid is at least one selected from the group consisting of phthalic anhydride, isophthalic acid, terephthalic acid, adipic acid, azelaic acid, sebacic acid, tetrahydrophthalic anhydride, maleic anhydride, fumaric acid, itaconic acid, trimellitic acid, trimellitic anhydride, pyromellitic anhydride, succinic acid, cyclohexane dicarboxylic acid, and naphthalene dicarboxylic acid.

Claim 6. (original) The method according claim 2, wherein the polybasic acid is used in an amount of 1 to 70% by weight, based on the weight of the first depolymerization product.

6. The method of claim 2, wherein the amount of the polybasic acid is in the range of 10~70% by weight of the weight of the depolymerized product from step (a1).

Claim 7. (original) The method according claim 1, wherein steps (a) and (b) are carried out in the presence of 0.05 to 0.5% by weight of a reaction catalyst, based on the total weight of reactants.



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7. The method of claim 1, wherein steps (a) and (b) are carried out in the presence of depolymerization and polycondensation catalysts in an amount of 0.05~0.5% by weight of the reactant.

Claim 8. (original) The method according to claim 1, wherein steps (a) and (b) are carried out in the range of 200 to 250°C.

8. The method of claim 1, wherein steps (a) and (b) are carried out at a temperature of 200~250° C.

Claim 9. (original) The method according to claim 1, wherein the polyhydric alcohol in step (b) is at least one selected from the group consisting of ethylene glycol, propylene glycol, 1,3-propanediol, 1,4-butanediol, 1,6-hexanediol, neopentyl glycol, diethylene glycol, dipropylene glycol, polyethylene glycol, alkylene oxide adduct of bisphenol A, trimethylol propane, glycerin, pentaerythritol, fatty acid mono- glyceride, and mono polyhydric alcoholide of fatty acid.

9. The method of claim 1, wherein the polyhydric alcohol in step (b) is at least one selected from the group consisting of ethylene glycol, propylene glycol, 1,3-propanediol, 1,3-butanediol, 1,6-hexanediol, neopentyl glycol, diethylene glycol, dipropylene glycol, polyethylene glycol, an alkylene oxide adduct of bisphenol A, trimethylol propane, glycerin, and pentaerythritol.

Claim 10. (original) The method according to claim 1, wherein the polyhydric alcohol in step (b) is used in an amount of 1 to 70% by weight, based on the weight of the de- polymerized product in step (a).



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10. The method of claim 1, wherein the amount of the polyhydric alcohol in step (b) is in the range of 10~70% by weight of the copolymerized product from step (a).

Claim 11. (original) The method according to claim 1, wherein the polyester-amide block polymer prepared in step (b) has a weight average molecular weight of 3,000 to 50,000.

11. The method of claim 1, wherein the polyester polymer in step (b) has a weight average molecular weight of 3,000~50,000.

Claim 12. (original) The method according to claim 1, wherein the polyester-amide block polymer prepared in step (b) has a softening point of 10 to 150°C.

12. The method of claim 1, wherein the polyester polymer in step (b) has a softening point of 70~150° C.

Claim 13. (original) The method according to claim 1, wherein the polyester-amide block polymer solution in step (c) is obtained by a method comprising (c-1) reacting the polyester-amide polymer of step (b) with a basic compound to obtain a neutralized polyester-amide block polymer; and (c-2) dissolving the neutralized polyester-amide block polymer in water, a hydrophilic solvent or a mixture thereof.



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**13.** The method of claim 1, wherein step (c) of recovering the polyester polymer in liquid form comprises:

- (c1) reacting the polyester polymer from step (b) with a basic compound in order to obtain a neutralized polyester polymer; and
- (c2) dissolving the neutralized polyester polymer from step (c1) in water, a hydrophilic solvent, or a mixture thereof.

Claim 14. (original) The method according to claim 13, wherein the basic compound is at least one selected from the group consisting of sodium hydroxide, potassium hydroxide, ammonium hydroxide, lithium hydroxide and organic amines.

**14.** The method of claim 13, wherein the basic compound is at least one selected from the group consisting of sodium hydroxide, potassium hydroxide, ammonium hydroxide, lithium hydroxide, and amines.

Claim 15. (original) The method according to claim 13, wherein the basic compound is used in an amount of 1 to 30% by weight, based on the weight of the polyester-amide block polymer.

**15.** The method of claim 13, wherein the amount of the basic compound is in the range of 3~30% by weight of the polyester polymer from step (b).



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Claim 16. (original) The method according to claim 13, wherein the hydrophilic solvent is at least one selected from the group consisting of alcohols, ethers, acetone, diacetone alcohol, dimethyl formamide, dimethyl acetamide, tetrahydrofuran, ethyl cellosolve, propyl cellosolve, butyl cellosolve and N-methyl-2-pyrrolidone.

16. The method of claim 13, wherein the hydrophilic solvent is at least one selected from the group consisting of alcohols, ethers, acetone, diacetone alcohol, dimethyl formamide, dimethyl acetamide tetrahydrofuran, ethylene glycol, propylene glycol, butylene glycol, and N-methyl-2-pyrrolidone.

Claim 17. (original) The method according to claim 13, wherein water, the hydrophilic solvent or a mixed solvent thereof is used in 1 to 10-times amount based on the weight of the neutralized polyester-amide block polymer.

17. The method of claim 13, wherein the amount of water, the hydrophilic solvent, or the mixture thereof is in the range of 1-10 times the weight of the neutralized polyester polymer.

Claim 18. (original) A recycling method of a mixed waste of polyester and polyamide, comprising:

- (a) reacting the mixed waste of polyester and polyamide with a polyhydric alcohol to obtain a polyester-amide depolymerization product;



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- (b) reacting the depolymerized product with a polybasic acid, and polycondensing the reaction product with the polyhydric alcohol to obtain a polyester-amide block polymer containing 2 or 3 carboxyl groups at chain ends thereof and having an acid value of 1 to 150 mgKOH/g; and
- (c) reacting the polyester-amide block polymer with a basic compound to obtain a polyester-amide block polymer in the form of a neutralized salt, followed by dispersing in water, a hydrophilic solvent or a mixed solvent thereof to obtain a water-soluble and water-dispersible polyester solution.

18. A method for recycling waste polyester resin, the method comprising:

- (a) reacting waste polyester resin with a polyhydric alcohol to depolymerize the waste polyester resin, removing excess polyhydric alcohol under reduced pressure,

and reacting the reaction product with a depolymerization stabilizer solid resin to provide a stable depolymerized product;

- (b) addition-reacting the depolymerized product from step (a) with a polybasic acid and polycondensing the reaction product with a polyhydric alcohol to provide a polyester polymer having two or three carboxylic groups at its chain end and having an acid value of 10~150 mgKOH/g; and


- (c) reacting the polyester polymer with a basic compound to provide a neutralized polyester polymer and dispersing the neutralized polyester polymer in water, a hydrophilic solvent, or a mixture thereof to provide a dispersion of the polyester polymer.

Claim 19. (original) The method according to claim 18, wherein the basic compound is at least one selected from the group consisting of sodium hydroxide, potassium hydroxide, ammonium hydroxide, lithium hydroxide and organic amines.



**19.** The method of claim 18, wherein the basic compound is at least one selected from the group consisting of sodium hydroxide, potassium hydroxide, ammonium hydroxide, lithium hydroxide, and amines.

Claim 20. (original) The method according to claim 18, wherein the basic compound is used in an amount of 1 to 30% by weight, based on the weight of the polyester-amide block polymer in step (b).

 **20.** The method of claim 18, wherein the amount of the basic compound is in the range of 3~30% by weight of the polyester polymer from step (b).

Claim 21. (original) A recycling method of a mixed waste of polyester and polyamide, comprising:

- (a) reacting the mixed waste of polyester and polyamide with a polyhydric alcohol to depolymerize the mixed waste, and stabilizing the resulting product with a depolymerization-stabilizing solid resin to obtain a stabilized polyester de-polymerization product;
- (b) polycondensing the depolymerized product with a polybasic acid, dimethyl 5-sodium sulfoisophthalate (DMSSIP) or a mixture thereof, and adding an acid value-adjusting polyhydric alcohol to the resulting reaction product to obtain a polyester-amide block polymer; and
- (c) recovering the polyester-amide block polymer in the form of an aqueous solution where the polymer is dissolved in water, in the form of an organic solution where the polymer is dissolved in a hydrophilic organic solvent, or in solid form.



**21.** A method for recycling waste polyester resin, the method comprising:

- (a) reacting waste polyester resin with a polyhydric alcohol to depolymerize the waste polyester resin, removing excess polyhydric alcohol under reduced pressure, and reacting the reaction product with a depolymerization stabilizer solid resin to provide a stable depolymerized product;
- (b) polycondensing the depolymerized product from step (a) with a polybasic acid, DMSSIP, or a mixture thereof and adding a polyhydric alcohol for use in adjusting acid value into the polycondensed product to provide a polyester polymer; and
- (c) recovering the polyester polymer in liquid or solid form, wherein the polyester polymer recovered in liquid form is dissolved in water, a hydrophilic solvent, or a mixture thereof.

Claim 22. (original) The method according to claim 21, wherein the depolymerization-stabilizing solid resin is at least one selected from the group consisting of gum rosin, wood rosin, tall rosin, hydrogenated rosin, maleated rosin, rosin ester, pinene resin, dipentene resin, C5 petroleum resin, C9 petroleum resin, dammar resin, copal resin, DCPD resin, hydrogenated DCPD resin and maleated styrene resin.

**22.** The method of claim 18 or 21, wherein the depolymerization stabilizer solid resin is at least one selected from the group consisting of rosin and derivatives thereof, hydrogenated rosin, rosin ester, dehydrogenated rosin, maleic rosin, dammar resin, copal resin, petroleum resin and derivatives thereof.

Claim 23. (original) The method according to claim 21, wherein the depolymerization-stabilizing solid resin is used in an amount of 1 to 100% by weight, based on the weight of the depolymerization product.



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**23.** The method of claim 18 or 21, wherein the amount of the depolymerization stabilizer solid resin is in the range of 10~100% by weight of the depolymerized product.

Claim 24. (currently amended) The method according to claim 18 or 21, wherein the polyhydric alcohol is at least one selected from the group consisting of ethylene glycol, propylene glycol, 1,3-propanediol, 1,4-butanediol, 1,6-hexanediol, neopentyl glycol, diethylene glycol, dipropylene glycol, polyethylene glycol, alkylene oxide adduct of bisphenol A, trimethylol propane, glycerin, pentaerythritol, fatty acid mono- glyceride, and mono polyhydric alcoholide of fatty acid.

**24.** The method of claim 18 or 21, wherein the polyhydric alcohol is at least one selected from the group consisting of ethylene glycol, propylene glycol, 1,3-propanediol, 1,3-butanediol, 1,6-hexanediol, neopentyl glycol, diethylene glycol, dipropylene glycol, polyethylene glycol, an alkylene oxide adduct of bisphenol A, trimethylol propane, glycerin, and pentaerythritol.

Claim 25. (currently amended) The method according to claim 18 or 21, wherein the polybasic acid is at least one selected from the group consisting of anhydrous phthalic acid, isophthalic acid, terephthalic acid, adipic acid, azelaic acid, sebacic acid, anhydrous tetrahydrophthalic acid, anhydrous maleic acid, fumaric acid, itaconic acid, trimellitic acid, anhydrous trimellitic acid, anhydrous pyromellitic acid, succinic acid, cyclohexane dicarboxylic acid, naphthalene dicarboxylic acid, dimeric acid and C6-C25 fatty acids.



25. The method of claim 18 or 21, wherein the polybasic acid is at least one selected from the group consisting of phthalic anhydride, isophthalic acid, terephthalic acid, adipic acid, azelaic acid, sebacic acid, tetrahydrophthalic anhydride, maleic anhydride, fumaric acid, itaconic acid, trimellitic acid, trimellitic anhydride, pyromellitic anhydride, succinic acid, cyclohexane dicarboxylic acid, and naphthalene dicarboxylic acid.

Claim 26. (currently amended) The method according to claim 18-~~or~~ 21, wherein the polybasic acid is used in an amount of 1 to 50% by weight, based on the weight of the depolymerization product in step (a).

26. The method of claim 18 or 21, wherein the amount of the polybasic acid is in the range of 10-50% by weight of the depolymerized product from step (a).

Applicant claims to depolymerize and copolymerize a mixed waste of polyester and polyamide but does not claim to obtain waste by such procedure. As such, the depolymerization and copolymerization disclosed by Matsumura are equivalent to applicant's, even though Matsumura does not claim to be recycling the material. The fact that applicant claims "waste" material is merely a source limitation; it does not confer anything special about the materials per se.

First, Matsumura discloses the use of a monohydroxy alcohol in the depolymerization of the mixture of polyester and polyamide while Kim discloses the use



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of a polyhydric alcohol in the depolymerization of polyester, which demonstrates that the use of either alcohol is equivalent and interchangeable as a function of depolymerization. It would have been obvious to one having ordinary skill in the art at the time the invention was made to have used a polyhydric alcohol as disclosed in Kim in the production of polymers in Matsumura as they are functionally equivalent and this would allow for cross linking of the polymers.

Alternatively, regarding claims 1 - 26: With the exception of the alcohol used, as explained above, applicant's claims are identical to Kim's disclosures, as clearly seen above in the comparison of each claim. Some numerical values are not identical but contain overlapping ranges. For instance, applicant's claims 1 and 18 claim an acid value in the range of 1 to 150 mgKOH/g. Kim discloses (claims 1 and 18) a range of 10 – 150 mgKOH/g. Applicant's claim 4 claims a range of 1:10 to 10:1 of solid resin dissolving agent : mixed waste. Kim discloses (claim 4) a ratio of 1:9 to approximately 9:1. Claims 6, 10 and 26 claim a range of 1 – 70% of acid and of alcohol, while Kim discloses (claims 6, 10 and 26) a range of 10 – 70 %. Claims 15 and 20 claim an amount of 1 to 30% by weight of basic compound used, while Kim discloses (claims 15 and 20) 3 – 30%. Claim 23 uses an amount of 1 to 100% by weight of solid resin while Kim discloses (claim 23) an amount of 10 – 100%. Kim's values in all instances are wholly enclosed within applicant's claimed range. The subject matter as a whole would have been obvious to one having ordinary skill in the art at the time the invention was made, since it has been held that choosing the overlapping portion, of the range taught



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in the prior art and the range claimed by the applicant, has been held to be a *prima facie* case of obviousness, see *In re Malagari*, 182 USPQ 549.

A hydroxyl group and an amino group behave similarly by being functionally equivalent in the condensation mechanism with a carboxylic acid and, further, a copolymer made of polyester and a polyamide allows for mutual compatibility. Applicant also admits that polyester/polyamide mixed products should be recycled. Therefore, it would have been obvious to one of ordinary skill in the art to have followed the same procedures used by Kim to depolymerize and polycondensate polyester to depolymerize and polycondensate the polyesteramide of Matsumura, since both polyester and a polyesteramide copolymer are compatible and a need for recycling both have been identified.

### ***Prior Art Cited But Not Applied***

Any prior art reference which is cited on Form PTO-892 but not applied is cited to show the general state of the art at the time of applicant's invention. Said references teach recycling methods, depolymerization, polycondensation and copolymerization procedures.

### ***Examiner Information***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Frances Tischler whose telephone number is (571)270-



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5458. The examiner can normally be reached on Monday-Friday 7:30AM - 5:00 PM; off every other Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Larry Tarazano can be reached on 571-272-1515. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/D. Lawrence Tarazano/  
Supervisory Patent Examiner, Art Unit 4171

Frances Tischler  
Examiner  
Art Unit 4171

/FT/